

Read the Special Articles this month on "California's Danger from Oriental and Tropical Diseases."

# CALIFORNIA STATE BOARD OF HEALTH.

## MONTHLY BULLETIN

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	University of California, Berkeley

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## REGULAR MEETINGS

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The California State Board of Health meets regularly the first Saturday of each month, but the stated meetings of January, April, July, and October constitute the quarterly meetings required by law to be held at the Capitol of the State.

By courtesy of the University of California the Food and Drug Laboratory and the Hygienic Laboratory are located in University buildings at Berkeley, California.

**Address all communications to the**

**SECRETARY, Sacramento, California.**

# DECEMBER BULLETIN.

## MALARIA THE MINOTAUR OF CALIFORNIA.

WILLIAM F. SNOW.

Somewhere among the stories of Greek mythology is one of Minos, King of Crete, who avenged himself against the Athenians by demanding a yearly tribute of seven youths and seven maidens. These he sent to be devoured by the Minotaur, a monster with a bull's body and a human head, which was kept confined in a cleverly constructed labyrinth. It requires little imagination to adapt this old legend to California's yearly sacrifice of youths and maidens to the "chills and fever" of the lowlands. Throughout the length of the great Sacramento and San Joaquin valleys the Spirit-of-the-Swamp demands a tribute of those who would settle in its domain. Its Minotaur is called Miasma, and we yearly furnish our victims, paying little heed to the voice of Science explaining how we may slay the monster, if we will.

A citizen of the Sacramento Valley writes: "It is unnecessary to state that the prevalence of malaria is one of the most serious drawbacks to this region. *In my own neighborhood I could name ten families who have purchased fruit farms, fought malaria for a year or two, rented to Japanese, and moved away.* Some of us in this foothill region think it is time to begin a county-wide campaign against the malarial mosquito. This last year malaria has been exceptionally active, and it would be just the time now to start a campaign. However, we are in the dark as to just what the legal basis is and how to proceed. What would you advise?"

Abstract advice is not difficult. A successful warfare against malaria may be waged by doing three things:

*First*—Preventing the female mosquitoes of a small group of anophles mosquitoes from sucking blood from malarial-fever patients.

*Second*—Promptly killing all the mosquitoes of these species, which, eluding our vigilance in number one, may have sucked blood.

*Third*—Effectively protecting all well persons from the bites of the mosquitoes, which may contrive to escape numbers one and two.

Any attempt, however, to apply these measures to a given locality demonstrates certain difficulties. In the first place, there are many persons who still believe malaria to be caused by emanations from decaying vegetable matter and from freshly upturned soil. There are others who believe it to be a disease caused by bad water. As evidence that the mosquito theory is untenable, many point to the fact that certain mosquito-infected districts have never had malaria, whereas many malarious districts that have been properly drained and sewered are now free from malaria, although mosquitoes still abound. These ideas must be overcome by popular education before effective coöperation can be obtained in protecting all the people from the bites of mosquitoes. In the second place, there are some 700 species of mosquito. They all look alike to

the untrained citizen, and it seems to him hopeless to attempt to exterminate all the mosquitoes.

The full history of the transmission of malaria has been known to medical science scarcely ten years. Sir Patrick Manson, writing on malaria in 1898, summed up the status of preventive measures prior to the proving of the mosquito theory as follows:

"Experience has shown that much can be done to free a locality of malaria. *Drainage and cultivation* is desirable where the land will repay the expenditure, permanent and complete flooding where it will not." \* \* \* "The inhabitants of malarious districts ought to live in villages and towns with well paved streets, and courts, *going out to cultivate* their fields *during the day*, but *returning to sleep* in the town *before nightfall*. Houses should be placed on high and dry situations." \* \* \* "It is *unwise to have flower beds or vegetable gardens near bedroom windows*, or to allow water from bathrooms or cook-houses to flow over the ground in the vicinity of the house, or to *keep water unchanged* in tubs or water-butts *for mosquitoes to breed in*. Pools and puddles of *stagnant water* should be *filled up* and *turfed*. The *neighborhood of swamps* is *to be avoided*. There are many simple precautions of this sort which will occur to every prudent man, and which, in malarious countries, he should take care to have carried out."

"Much was expected at one time from the cultivation of eucalypti of different species—particularly *eucalyptus globulus*—as a means of suppressing malaria. Specific virtues were attributed to its balsamic exhalations. These hopes have not been fulfilled; but *undoubtedly*, the effect of this rapidly growing tree *in drying the soil*, or perhaps *in keeping away mosquitoes*, which are said to object to the peculiar aroma given off by the leaves, *is of use in some localities*. The same may be said of the cultivation of the sunflower, of the *kiri* tree, and of other plants. *Possibly they, too, may influence insect life*, and do good in this way also."

"The soil must not be disturbed during the sickly season. Workmen so engaged must not sleep near their work."

"If it be true, as is popularly believed, that the *liability to the acquisition of malaria is greatest in the evening and early morning*, notoriously unhealthy places should be avoided at these times. In such places *sleeping on the ground is dangerous*. *Bedrooms* should, therefore, be situated *in an upper story*, and dwelling rooms be well raised on piles or arches above the ground."

"The possibility of the *inoculation of the malaria germ by mosquito bites should not be ignored*. *Mosquito nets must invariably be used*, many travelers attest their value. The body should be covered up during sleep and every precaution (as fires, *eucalyptus boughs*, etc.) that circumstances permit should be employed to keep these insects away."

Sir Ronald Ross, to whom belongs the principal credit for finally solving the mystery of malarial transmission by the mosquito, maintained at this time that *a square yard of malarious soil a yard away was just as dangerous as a square mile of swamp a mile away*; that *a puddle of water under a bedroom window was more dangerous than acres of rice fields some distance off*, whether to windward or leeward.

This advice was advanced ten years ago, just before the final proving of the mosquito theory of transmitting malaria, but it is perfectly sound and applicable to-day. The only difference is that we know now why it is so.

\* "It has been proved that malaria is carried from person to person by the bite of the female of a particular species of mosquito, namely, the *anopheles*; and we hold that it is conveyed in practically no other way. Our sanitary measures are, therefore, directed toward the destruction of this species of mosquito. The female *anopheles* lays her eggs (about 100 at a time) on the surface of fresh water in which grass and algae are abundant. These eggs float around until hatched by the sun's heat, and the young larvæ flee to the grass and algae for protection from small fish and other natural enemies. After larval and pupal stages in the water lasting about eight days, they develop into full-grown mosquitoes. The adult *anopheles* is weak in flight and does not habitually move about much; probably one hundred yards is practically its ordinary flight. The adult avoids the wind and seeks for its protection undergrowth, grass and plants near the ground.

Our measures for mosquito destruction are, then, based on the peculiarities just described. We destroy all the breeding places within one hundred yards of the locality we desire to protect, so that the mosquito can find no water in which to lay her eggs, or in which her larvæ can develop. At the same time we clear off the brush within the same area, so that the adult can not secure protection against the wind.

\* Extracts from President's Address before the American Medical Association, June, 1909, by William C. Gorgas, Commanding Sanitary Officer, Isthmian Canal Zone.

The methods used for the destruction of breeding places must vary with the locality. Wherever we can drain at reasonable cost, we do so, usually with superficial ditches, or with subsoil tiling. Subsoil tiling makes the ideal antimalarial drainage system; it does away entirely with mosquito breeding, and, after it is once laid in, no further expenditure is necessary in keeping the ditch open. In the tropics the growth of vegetation is so rapid that a superficial ditch has to be cleaned out every two weeks to keep the channel free from breeding places. This is a very heavy expense, and we, therefore, find it more economical to concrete all superficial ditches. A concrete ditch should be swept out frequently, else obstructions will form many small pools.

Drainage is, par excellence, the means for anopheles destruction, but in many cases, by reason of the expense it can not be resorted to; as, for instance, where a town is situated near a large swamp or lake. In such cases the larvæ can live only around the edges of the water, where they are protected by grass and algæ from small fish, or in holes made by the feet of animals in the soft soil along the margins of the water. We, therefore, keep the brush and grass cut there and see that no animals have access. Where a town is situated near the banks of a small stream, we keep the banks and the stream itself free from grass and algæ.

When it can be done with safety, sulphate of copper is used for killing algæ. When this can not be used, we kill the larvæ with crude petroleum, or phinotas oil. Petroleum destroys the larvæ by spreading over the surface of the water and smothering them, while phinotas oil acts as a direct poison. These are the chief methods of destroying larvæ; and I look on their destruction, next to efficient drainage and the clearing away of vegetation, as the principal means for controlling malaria.

Brush-cutting we regard as second only to drainage in importance as an antimalarial measure. If brush and grass are thick about a dwelling, mosquitoes seek them as shelter from the wind, and, if continuous stretches exist, the anopheles will wander by short flights a mile or more from a breeding place. A cleared space of a hundred yards will, as a rule, stop her flight.

We keep the brush and grass cut within a hundred yards of the point to be protected. This is a large item of expense, as both grow very rapidly at Panama. It is a great economy to get the ground in such condition, preferably by subsoil tiling, that horse mowers and scythes can be employed. They are now in use in most of the localities along the line of the canal where work has been going on for a year or more.

A specially good example of the results that can be attained by antimalarial work is afforded by our experience at Colon. This is a town of 15,000 inhabitants, and is built on an island just above sea level. Where the ground has not been filled in, the houses have to be placed on piles from two to four feet in height, and are approached by wooden footways raised above the water. The heavy rains in the wet season convert this unfilled ground into a fresh-water swamp. Mosquitos of every kind were very numerous in Colon when sanitary work was begun there.

The brush was first cut away for half a mile back of the town; this cleared area was intersected by small canals twenty feet wide and six feet deep, and the entire swamp was connected with these canals by surface ditches. This allowed the fresh water to run off, and the incoming tide caused all ditches to be filled daily with sea water. We also looked carefully after all water containers in the town, including cisterns and barrels.

The result has been that Colon is now almost free from mosquitoes of all kinds. This was unexpected. It was hoped by our sanitary measures to get rid of the disease-carrying mosquitoes, namely, the stegomyia and anopheles, which do not fly far; but it was not expected that the culex variety, which is strong on the wing, would be affected to any great extent.

In addition to measures directed toward the destruction of mosquitoes, the houses of all employees on the Isthmus are screened with wire gauze. Most of the houses are built with galleries, on which the doors and galleries open. These galleries are screened rather than the doors and windows themselves, thus leaving only one or two entrances into each house to be looked after with regard to being kept closed. The screening should always be supervised by some one experienced in mosquito work, as there are many points which will be overlooked by the average carpenter.

We also recommend the use of mosquito bars, though most of us have become somewhat careless on this point, as mosquitoes are rare in houses which are carefully screened in the well drained districts.

It is neither difficult nor expensive for the white man going to the tropics to protect himself from malaria. It is only necessary that he should screen his house well, drain and clear off the brush within one hundred yards of his residence. These measures are much less expensive than those he must take in the temperate zones to protect himself from cold."

These methods illustrate what the citizens of malarial districts in California should do to rid themselves of the prevalence of this disease. The problem is not so difficult here because the breeding season for the mosquito is shorter, there is a long drought in the summer, vegetation does not grow so rapidly and open ditches do not clog up so easily as in the tropics.

The malaria parasite once introduced by the mosquito into man usually remains for many months and sometimes for one or two years or longer. During this period the parasites at intervals enter the peripheral circulation, and may at such times infect other mosquitoes. This is probably the way in which malaria bridges the winters in California. There is no evidence thus far to show that any of the domestic animals are subject to forms of malaria which attack man; and no evidence has been found of the parasites being able to transfer themselves from one man to another, except by the agency of the anopheles mosquito.

If the citizens of any malarious district will believe these facts of Science and act accordingly, they can assuredly drive malaria from their vicinity. Popular education is the keynote of progress in this work. We are apt to forget that the average citizen has little time for reading about the advances of Science. Our schools have not seen the value of teaching these facts. The result is the prevalent idea of malaria is to-day about what it was when Charles Dickens embodied in "Martin Chuzzlewit" his satire on American real estate dealers and incidentally drew a pen picture of human misery and inefficiency which is readily recognized by any dweller in a malarious district.\* Dr. Manson, concluding an address in San Francisco in 1905, made use of the following:

"Let us imagine a primitive native community—a village in some district in which anopheles mosquitoes abound; for example, a negro village on the west coast of Africa. Let us suppose that by some happy and very improbable chance this village is free from malaria. A stranger with malarial gametes in his blood comes to the village. The local anopheles bite him and become infected and infective. In a very short time every soul in that village gets malaria. There is much sickness, and there are deaths not a few. After some years, and after many reinoculations by infected mosquitoes, the surviving original inhabitants gradually acquire immunity from malaria and the parasite can no longer be found in their blood. Meanwhile, children are born in the village. They have no immunity, and therefore, soon after birth, being bitten by the infected anopheles, acquire the infection. In the course of years they too become immune. Meanwhile, other children are born, are bitten, and become infected. In this way there is kept up in the village a permanent stock of infected anopheles. This is the condition of every village in every highly malarious district; the adults are immune, the children are nearly all of them full of malaria parasites, and a large proportion of the village mosquitoes are infective.

The practical lesson to be drawn from this is that in a malarious district the neighborhood of a native village should be shunned, especially during the evening, night and early morning, when anopheles are most active.

The adult native of a highly malarious district, so far as malaria is concerned, is generally a safe companion; he has no parasites in his blood, having acquired immunity by repeated inoculations in youth. But the adult native of a less highly malarious district is not always a safe companion, for in him the process of immunization may not be complete, and he may possibly be the subject of an existing infection. Any one, black man or white man, who has malaria parasites in his blood may become a center of infection, and is therefore a danger to his neighbors wherever anopheles are about. He should, therefore, be protected from mosquito bite and actively treated."

"The great practical value of these facts I have mentioned is patent to every thoughtful man. A clear conception of the life history of the malaria parasite, ability to recognize the special kind of mosquito that conveys the parasite, common sense, a little money, and we should be able in virtue of this knowledge to abolish malaria in any coöoperating community."

\* "Martin Chuzzlewit," by Charles Dickens, Chapman & Hall Edition, Vol. I, Chap. XXIII, pp. 456-463; Vol. II, Chap. VIII, pp. 117-138.

## THE HOOKWORM AND ITS RELATIVES.

WILLIAM F. SNOW.

The "American Murderer," or New World Hookworm, has one close relative, the Old World Hookworm, and a number of more or less distant family relations—the hookworms of the rat, dog, fox, seal, chimpanzee, and various other animals. The Old World Hookworm was first discovered in a human cadaver in Milan, 1838. The discoverer, Dubini, described it in 1843 under the name *Aukylostoma duodenale*. It was later called *Uncinaria duodenalis*. It was proved to be the cause of brickmakers' anæmia, which had been known for a long time in Italy. The peculiar anæmia of the workmen on the Saint Gothard tunnel was traced to it. Its responsibility for anæmia among the miners of Belgian, Sardinian, and French mines was proved in 1882. The brickmakers at Bonn and at Cologne and the miners in the Rhine provinces of Westphalia and Silesia gave testimony against it. Thus the history of the common hookworm of Europe, Asia, Africa and Australia has been built up. Its new world relative was able to escape detection up to the American occupation of Cuba and Porto Rico. Assistant Surgeon B. K. Ashford, U. S. A., who first reported the prevalence of the disease in Porto Rico in 1899 and has since been made chairman of the Commission to study and treat the disease there, described the situation in the following words:

"In valley, mountain and coast, alike, is found a ghastly population dragging out a miserable existence, and with a death rate which has shocked all who have occasion to learn of it. The number of children who have lost parents and most of their relatives is very large, and these pick up a living as best they can. Men who should be supporting their families are chronic invalids, and the families, also infected by the disease, are in a condition of misery beyond description. On the arrival of the hospital camp they come in scores and hundreds, on foot, on horseback, or borne along in hammocks. They are cured, taught how to prevent reinfection and return home, well and happy to spread the good news."

Dr. Charles W. Stiles has found that thousands of the "poor whites" of the southern United States owe their shiftless, dirt-eating, unhealthy characteristics to the results of the hookworm disease, which has existed among them unsuspected. In July, 1909, the Government published a paper by Dr. Stiles, from which the following statements are taken:

Hookworm disease is caused by the presence of small worms belonging to a group of round worms, technically known as *Uncinariinae*. Two different kinds of hookworms occur in man.

The New World Hookworm is about one fourth to one half an inch long and about as thick as a hairpin. It has hard cutting plates or jaws guarding the entrance to its mouth, with the aid of which the parasite fastens to the intestinal wall. In its adult stage it is found fastened to the lining membrane of the small intestines. It is also sometimes found in the stomach. It makes a wound, sucks the blood, and produces a poisonous substance which injures the person infected. There may be a few or several thousands. The disease is more common among children.

The parasites do not multiply in the intestines, as their eggs require oxygen to develop, therefore every hookworm found entered the body as a young worm. The parasites in the bowels lay hundreds of eggs which are discharged by the patients in their stools. An ordinary stool may contain thousands of these eggs. They escape only through these bowel discharges.

A few hours after the eggs are passed by the patient a young embryo "hatches" from each egg, as a tiny worm scarcely visible to the naked eye. It feeds a few days, sheds its skin twice within a week, and continues to live in the cast-off skin without taking food until it enters the human body.

It may be swallowed with food, but enters the body more frequently by boring its way through the skin of the foot, causing "ground itch." It enters the blood and is carried through the heart to the lungs, thence up the windpipe, down the gullet, through the stomach and into the small intestine, where it sheds its skin twice more before beginning its life work as an adult.

All this sounds like some new edition of Jonah and the Whale, and is well calculated to rouse incredulity and disgust in the sensitive chance reader who has never used the microscope nor realized that the human body is a great biological city of individual cells requiring all the sanitary transportation and industrial contrivances recognized as necessary to our modern municipalities. The hookworm is but one of the parasites of the "underworld" which has contrived a very clever method of invading the city and extracting its tribute. It makes more successful warfare on mankind than the plague bacillus from the parasites' point of view, because the purpose of all attacks of disease-germs is to subjugate the body, not to kill it. The plague bacillus attacks the body so fiercely and propagates its kind with such utter disregard for the "Conservation of Natural Resources" that both the body and the bacillus are soon destroyed. The more sagacious hookworm subjugates the body, but does not overpopulate nor kill it. It is of no concern to the hookworm and its progeny that the efficiency of the body for work or success in life is killed. It is sufficient for its needs that the man goes on living.

If Science is right, then it should be possible to successfully fight this disease: (1) by finding a drug which will kill or so stupefy the hookworm that it may be flushed out of the intestine by a cathartic; (2) by destroying the bowel discharges of hookworm patients; (3) by so constructing yard-toilets that the young hookworms that may be discharged by unknown patients may not get an opportunity to get into food or on the skin of any person. The requirement of wearing shoes is an added precaution.

These things have been done. A drug (thymol) has been found. The treatment of those diseased and the installation of proper sanitary devices have been successfully carried out on a large scale. Science has placed in our hands fully tested weapons for us to use or not, according to our interest in preserving human life and efficiency. Only two things are required of us: (1) Our physicians must familiarize themselves with the diagnosis and treatment of this disease. (2) We must make use of the physician's knowledge and be prepared to carry out the necessary regulations concerning sanitation.

Dr. Herbert Gunn writes in a letter of recent date concerning hookworm in California:

"My first cases of *Uncinariasis* were observed in 1905. As only an occasional isolated case had been observed in this State previously, this rather large number (seven cases) occurring in such a short space of time led me to systematically search for the disease. With the assistance of the Associated Charities of this city, through the services of one of their nurses, Miss Kane, I made a canvass of the Porto Rican colony. \* \* \* I found 62 cases in the examination of about 150 individuals—or approximately 40 per cent infected. \* \* \* Since 1905 I have encountered about 30 or 40 cases. \* \* \* Some of these latter cases were Porto Ricans and some were not. \* \* \* In 1905 I estimated that the Porto Rican colony in San Francisco was about 600 with about 800 or 900 more scattered throughout the State. If it be reasonable to suppose that all were infected in proportion to those I examined, there would be some 600 cases in the State. This does not take into account ex-soldiers, occasional Chinese or Japanese cases, etc. \* \* \* In 1905 there were four or five thousand Porto Ricans on sugar plantations in Hawaii. Many of these have since come to California and some must have had the disease. \* \* \* I can always find a case without any difficulty when needed for teaching purposes."

It is probable that a more careful investigation of suspicious cases will in the future show some increase in the number of hookworm infections. The chronological tables under the division of epidemiology in this bulletin give the number and location of deaths from this disease thus far reported to the Board.

## RECENT ARRIVALS FROM THE ORIENT.

WILLIAM F. SNOW.

Whether Amœbic Dysentery is a recent arrival from the Philippine Islands or has been with us for a long time may never be known. It is certain that there occur every year a considerable number of deaths from "chronic dysentery" which suggest this disease, and in which no microscopical examinations were made. The accurate diagnosis of amœbic dysentery requires the finding of entamœbas in the stools in conjunction with the clinical symptoms, or in the pus from liver-abscess cases. An increasing number of cases, thus carefully diagnosed, are being found each year in various parts of California. The United States Public Health Report for September 24, 1909, contained the following statement:

"Cases of amœbic dysentery are now frequently admitted to this hospital (Marine Hospital, San Francisco). The total number of such cases received from December 1, 1908, to August 9, 1909 (8 months), was 55, sixteen of which, it is believed, originated in California. A thorough and careful examination was made of each case, and no case was recorded as amebiasis until living motile amœbæ were found in the stools on several different days, nor was it then recorded unless the patient had also the clinical symptoms of the disease. \* \* \* It was found that of the 55 cases . . . 16 had undoubtedly contracted the disease on the Pacific coast of the United States. I concur in the opinion of Passed Assistant Surgeon Long that the disease is undoubtedly spread here (in California) by the eating of fresh vegetables raised by Chinese truckmen, who fertilize the plants with human excreta, as is the custom in China and other oriental countries."

"The amœba has also been demonstrated by one of the hospital staff in several recent cases of dysentery occurring in this city (San Francisco) in the practice of private physicians."

\*Prior to Surgeon Long's transfer (December, 1909) from San Francisco to the United States Hygienic Laboratory in Washington, he reported 114 verified cases of amœbic dysentery. Sixty-two were infected outside of California, but 52 were traced to infection within the State as follows: San Francisco, Oakland, Sausalito, etc., 39; Stockton and Sacramento, 8; Petaluma, 1; Colusa, 1; San Mateo, 1; Los Angeles, 2. There were 35 for San Francisco, with the following occupations: 26 sailors, 2 nurses, 3 housewives, 2 physicians, 2 business men. Among those remaining there were 12 river sailors, 1 ship captain, 2 engineers, 2 women.

Dr. Long writes:

"In addition to the above cases, I saw just prior to my departure 16 additional ones, making a total of 130. Replying to your question as to the prevalence of the disease in California, I would state that I am satisfied that amebiasis is both endemic and epidemic.

"My opportunities for observing cases were more or less limited to the patients (seafaring men) at the Marine Hospital, but I saw some cases at the invitation of physicians, the majority of these latter cases being residents of San Francisco, Oakland, Berkeley, etc., and the infection in almost every case was of local origin.

"My belief that amebiasis is epidemic and endemic is based on these facts: Cases were seen from San Francisco, Oakland, Berkeley, Sausalito, Petaluma, Colusa, Stockton, Sacramento, Los Angeles, and San Mateo. These cases were infected in the places mentioned.

"The use of human fecal matter for fertilizing purposes is a common practice in California.

"Amebæ have been cultivated from lettuce, water cress, etc., purchased in the markets and from other sources, on several occasions.

"Amebæ have been cultivated from water used for drinking purposes on several occasions, and from water from streams, etc.

\*Extracts from the Secretary's correspondence with Surgeon J. D. Long, forwarded through the Surgeon-General's office in Washington.

"That some of these amebæ are pathogenic was apparently proven in the case of Brogan (*vide* paper on amebiasis read before San Francisco County Medical Society, October, 1909).

"I am satisfied and so are physicians of San Francisco, who followed the amebiasis work during the year or more past, that further investigation would show conclusively that amebiasis is a fairly common disease in California and on the Pacific Slope, in fact, review of recent literature shows that cases of amebiasis have been infected in twenty-four States of the United States.

"The diagnosis of amebiasis is not difficult, the demonstration of living motile amebæ in fresh stools being sufficient.

"In order to secure a specimen for examination, the patient should be given a dose of magnesium sulphate (epsom salts) or a bottle of effervescent citrate of magnesia, preferably the latter. The first solid portion of the stool being thrown away, receive the liquid portion of the stool in a warm bedpan or chamber, and as soon as possible place a platinum loopful or an approximately equal quantity of the liquid feces on a clean glass slide, press a clean cover slip moderately firmly over it so as to produce a thin translucent specimen, and examine under low power of the microscope or with one seventh objective, cut the light down to a point where all objects in the field are plainly discernible, but not rendered indistinct by too much light, and the amebæ may be seen as translucent bodies, showing ameboid movement, containing a nucleus, granules, and, frequently, vacuoles and red blood cells; the amebæ are from 5 to 7 times the size of a white blood cell.

"If the patient has been constipated it may require several doses of saline to produce a stool sufficiently liquid, and several examinations may be required.

The important points to bear in mind are:

1. Examine stool warm.
2. Be sure it is liquid, not pasty.
3. Have clean slides and covers.
4. Make ten or twelve slides from each stool if the amebæ are not seen earlier, trying different portions of stool; often they are contained in a small bit of mucus.
5. Make examinations of stools on several different days; it sometimes takes daily examinations for a week or ten days.
6. Do not mistake *cercamonas hominis*, a flagellated organism, for amebæ. This is sometimes done. *Cercamonas hominis* are quite common parasites in human stools in California.
7. Do not make a positive diagnosis of amebiasis unless living motile amebæ are seen; it is better to reserve positive diagnosis till they are seen on at least two different days.

I have not gone into the question of differentiation of the amebæ, as to whether they are *entameba histolytica* or *entameba coli*, for the reason that all the cases I have seen in California presented symptoms directly referable to the amebæ. The differentiation is so difficult and uncertain that, personally, I believe it to be for the best interests of all concerned to treat any one having living motile amebæ in their intestines on the basis that the amebæ are pathogenic.

"Some observers of large experience are inclined to the belief that any amebæ found in the stool of a human being are pathogenic. My experience bears this out so far as I have been able to go.

"You have requested me to state how practical it may be for the ordinary physician to make a diagnosis of a case. This is difficult to answer, but so far as I have been able to observe, almost any physician, after a little instruction, if he has never seen amebæ before, can, with patient and necessary facilities, diagnose amebæ in liquid stools with very little difficulty."

In 1898 a Japanese investigator, Shiga, discovered a bacillus, which, after a careful study, was announced as the cause of a specific infectious dysentery. Shiga's work has been approved by many observers, including Dr. Flexner, who made a comparative study of the subject. Dr. Flexner is quoted relative to these comparative studies as follows:

"They indicate, moreover, that the acute dysenteries, tending to appear in groups of cases and in epidemics, whether in the Far East, Germany, or the West Indies, are due to the same organisms."

Dr. Thomas W. Jackson states in writings on tropical dysentery:

"There is little doubt that the distribution of the dysentery bacillus is through the medium of dysenteric stools, which find their way into water, and thence again into the human intestines to reproduce the disease. Our information concerning the extra corporeal existence of bacillus dysenteriae is extremely meager, but the method of dissemination is probably in every way similar to that obtaining in cholera and typhoid fever, and the clue to prophylaxis is the same as in these two diseases."

These are facts along the borderland of knowledge that has been tested by practical application. It is desirable that the layman as well as the medical man should note the progress of Science in this field. The citizen should know that the physician who ends all his investigations with the information his stethoscope and thermometer may give him is guessing in the majority of his diagnoses, or else has a very limited class of patients. The physician who does not take medical journals, nor buy medical books, nor attend medical conventions can not know the wonderful advances medical science is making year by year. Nine cases of illness out of every ten in the average community are easily diagnosed, but the "tenth" cases fill many unnecessary graves. The patient who expects his doctor to make a diagnosis at first sight, and the doctor who does not have courage to say he can't do it, will probably not get on well together in the treatment of amœbic or bacillary dysentery.

All California communities would do well to follow San Francisco's example and pass the following regulations:

1. Amœbic dysentery, or amœbiasis, shall be declared an infectious disease, and all physicians and hospitals notified that cases coming to their knowledge must be reported to the Board of Health.
2. The Health Officer shall prepare an ordinance to present to the Board of Supervisors, making the use of human excrement and sewage for the irrigation or fertilization of vegetables a misdemeanor.
3. As soon as possible sanitary inspectors shall be appointed to investigate the condition of vegetable gardens.
4. Samples of vegetables shall be collected to determine whether or not amœbæ may be cultivated from them.

On October 2, 1909, the State Board of Health adopted the following resolution:

"Whereas, amœbic and bacillary dysentery have appeared in California; and whereas, these are water-borne diseases;

*Resolved*, That in the opinion of this Board the use of sewage, in any form, for irrigation of fruits or vegetables usually eaten uncooked, should be, and it is hereby prohibited."

Under the department of epidemiology a table is printed giving the details of the deaths due to amœbiasis that have thus far been reported to the State Board of Health. A second table of "chronic dysentery" deaths is also printed to show the desirability of thorough diagnoses. For the past four months the Secretary has been following up all dysentery deaths with personal letters to the attending physicians. The microscope has been used in very few of the cases besides those reported as amœbic dysentery. However, many physicians have expressed their intention to use their microscopes in all suggestive cases in the future.

#### SOME OTHER TROPICAL AND ORIENTAL DISEASES OCCASIONALLY SEEN IN CALIFORNIA.

WILLIAM F. SNOW.

The *California Medical Journal* contained the following editorial for November, 1909:

"With the object of gaining an idea of the amount of tropical disease in the city of Oakland, the writer has examined a number of patients in its hospitals, clinics and dispensaries, with the result that tertian, quartan, and aestivo-autumnal malaria, leprosy, amœbic dysentery, and liver abscess, bubonic plague, filariasis, flagellate diarrœa and various intestinal parasites—including flukes (*Opisthorchis*), tape-worms (*Dibothrioccephalus*, *Taenia*, *Hymenolepis*), and round worms (*Ascaris*, *Oxyuris*, *Necator*, *Trichocephalus*, *Strongyloides*) have all been seen. It is proposed to publish a fuller communication when the list is complete, but the existence of these

and probably other tropical diseases is here recorded as being of interest and illustrative of the dangers of infection to which the inhabitants of the bay cities are constantly exposed."

Dr. Gunn has seen cases of filarial disease, bilharzia (lateral spined intestinal variety), sprue, beri-beri, and pernicious malaria during the past year.

Leprosy we have in limited numbers, and California physicians are fairly familiar with it. In 1905 Congress appropriated \$100,000 for an investigation station on the island of Molokai, Hawaii. This station is now complete, and the work already begun at Honolulu will now be carried on under much more favorable circumstances.

Yellow fever and cholera seem remote possibilities at present, but the history of these diseases should warn us not to relax our vigilance.

Trachoma is not uncommon in California, but our physicians are familiar with its diagnosis and treatment.

Pellagra is not essentially a tropical disease, but it is one of the recent ones to be found present in California. No cases have been reported in which there was evidence of infection having occurred within the State.

Dr. Philip Mills Jones, editor of the *California State Medical Journal*, has arranged for correspondence and special medical articles on tropical diseases, to be written by Dr. Creighton Wellman. He prefaces this announcement with a statement that "It is not any longer necessary to emphasize before the medical profession of this State the special position of responsibility to the Nation that California occupies in the matter of tropical medicine. The importance of the subject demands a recognition on the part of the whole profession of the Pacific coast of the various so-called tropical diseases which are now present in, or may at any time invade, our territory."

"Whether ye will it or no, America is bound to expand. \* \* \* The latent energies of American expansion must find their vent and opportunity in the tropics. as indeed has already happened, and more especially in those lands whose shores are washed by the Pacific.

For these lands this port of San Francisco is the natural jumping-off and dumping place. It takes little prescience to foretell that ere many years have passed thousands will annually leave your shores for tropic countries and thousands will return from tropic exile. \* \* \* The expansion of America will undoubtedly bring in its train great material prosperity to San Francisco. With this prosperity will come trials, duties, responsibilities. Not the least important of these are those having reference to disease and to the preservation of health in tropical countries."\*

"The advances in tropical medicine in the last fifteen years have shown that the white man can live in the tropics and enjoy as good health as he would have if living in the temperate zone. This has been demonstrated both by our two military occupations of Cuba and the Philippines, and by our present occupancy of Panama.

The returns for labor are many fold greater in the tropics than they are in the temperate zone. I think, therefore, that during the next few centuries the tendency will be for the white man to drift to the tropics."†

## COMMENTS.

### DISEASE EXPORTS.

The question of tropical diseases is not one of importation only. The sentiment of human justice which led the United States to espouse the cause of Cuba and assume the guardianship of the Philippines demands that we study soberly and with due regard to our American conscience our duty to unawakened China and her neighbors. To quote again

\*Problems in Tropical Medicine—Lane Lectures, San Francisco, 1905, Sir Patrick Manson.

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from Sir Patrick Manson, than whom there is no more experienced student of tropical medicine:

"The slow sailing ship managed to carry yellow fever to Europe; well then may the fast-traveling steamer carry yellow fever to Asia. If stepping stones are needed, there are Honolulu and the Philippines. This seems to me to be no idle speculation, but a big, ugly fact looming in the near future. It is difficult to imagine the extent of the calamity to Asiatic mankind that would follow the successful introduction of an infected stegomyia mosquito into such huge distributing centres as Hongkong or Singapore. You in America know what havoc yellow fever wrought in some of your cities, and that, too, in defiance of all the appliances of civilization and of the co-operation of an educated sympathetic population. What would happen on the introduction of this disease into a thoroughly non-immune, uneducated, unsanitary, superstitious, and overcrowded eastern city, into such a place as Canton, or into any of the great centres of population in tropical Asia? The immediate calamity would be terrible in its magnitude, but, even more than this, the East would be permanently contaminated and the traveler and trader in these parts would have another risk and anxiety to face."

Yellow fever is but one of the disease exports it may become our duty to prohibit.

Our great commercial leaders say there is barely time remaining for us to organize the great World's Fair, which is to announce the opening of the Panama Canal in 1915. If this be true, it must be self-evident that five years is also barely time enough to organize and perfect the new machinery necessary to control the new and dangerous disease-problems which will then confront us.

#### THE PICKET LINE OF OUR SANITARY ARMY.

We need a sanitary army and experienced officers. The United States Government has a small nucleus for this army in the men of the Public Health and Marine Hospital Service. As many of these men as can be spared from the quarantine stations have been detailed to picket duty and are posted along the shores of the Pacific at important shipping points in China, Japan, the Philippines, Hawaii, and along the South American coast.

With the opening of the Panama Canal, the outposts maintained in Cuba and along the Brazilian coast will also become of great importance to the protection of the shores of the Pacific. The Federal Government may well maintain this picket line and provide for interstate protection, but it remains for each State to organize its own sanitary militia. We can not expect the enlistment of competent officers and men in this sanitary militia unless funds are provided for salaries and maintenance, and training schools are established. Every effort should be made by influential citizens who see these things clearly to get our two great universities to utilize the rich material available in San Francisco for research work in tropical and general preventive medicine, and to equip the State Board of Health laboratories for studying the application of their scientific investigations to California's special problems. Until this is done we can not expect our Legislature and our counties to understand the importance of adequate appropriations and carefully selected Health Officers to carry on this Public Health conservation work.

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## DEPARTMENT OF VITAL STATISTICS.

GEORGE D. LESLIE, STATISTICIAN.

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*Marriages.*—The marriages reported for November numbered 2,078, as compared with 2,036 for the same month last year. For an estimated State population of 2,037,929, the November total represents an annual rate of 12.4, against 11.6 for October.

The November totals were highest for the following counties: Los Angeles, 440; San Francisco, 375; Alameda, 209; Marin, 113; Santa Clara, 89; Orange, 76; Fresno, 72; and Sacramento, 70.

The aggregate for San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo) was 736.

*Births.*—For November there were reported 2,584 living births, representing an annual birth rate of 15.4 per 1,000 population, as compared with 16.2 for the preceding month. The total for the corresponding month last year was 2,462.

The totals were highest for the following counties: San Francisco, 561; Los Angeles, 557; Alameda, 317; Santa Clara, 119; Fresno, 105; Sacramento 94; San Diego, 55; and San Bernardino, 50.

Altogether 1,646 births were registered in the twenty-six freeholders' charter cities, the leading cities being as follows: San Francisco, 561; Los Angeles, 400; Oakland, 167; Berkeley, 65; Sacramento, 61; Alameda, 42; San Diego, 41; Fresno, 40; San Jose, 38; Pasadena, 29; and Stockton, 26.

The aggregate for San Francisco and the transbay cities (Alameda, Berkeley, and Oakland) was 835, and for San Francisco and the other bay counties was 950. Similarly, the total for Los Angeles and neighboring chartered cities (Long Beach, Pasadena, and Santa Monica) was 458, and for the entire county was 557.

*Deaths.*—Exclusive of stillbirths, altogether 2,612 deaths were reported in November, this number including 167 delayed certificates for deaths in October or earlier months. The 2,612 deaths give an annual death rate of 15.6 for November, against 14.7 for the month before. The corresponding total for the same month last year was 2,484.

The November death totals were highest for the following counties: San Francisco, 534; Los Angeles, 520; Alameda, 262; Sacramento, 116; Santa Clara, 90; San Bernardino, 84; Fresno, 71; San Joaquin, 70; San Diego, 63; and Sonoma, 50.

There were altogether 1,454 deaths in the twenty-six chartered cities, the highest totals being as follows: San Francisco, 534; Los Angeles, 315; Oakland, 145; Sacramento, 64; San Diego, 49; San Jose, 39; Pasadena, 37; Stockton, 32; Fresno, 28; and Berkeley and Riverside, each 26.

The aggregate for the urban district (San Francisco and the trans-bay cities) was 723, and for the entire metropolitan area (San Francisco and the other bay counties) was 869. Similarly, the total for Los Angeles and neighboring chartered cities was 383, and for the whole county was 520.

*Causes of Death.*—For November there were reported 406 deaths from diseases of the circulatory system and 405 from various forms of tuberculosis, or 15.5 per cent of the total deaths in each case.

Other notable causes of death in November were as follows: Diseases of the respiratory system, 269; diseases of the digestive system, 265; violence, 255; diseases of the nervous system, 225; Bright's disease and nephritis, 180; cancer, 147; and epidemic diseases, 115.

Typhoid fever, as usual, led among epidemic diseases with 44 deaths, against 26 for diphtheria and croup, 12 for malarial fever, 10 for whooping-cough, and 23 for all other epidemic diseases.

The 44 deaths from typhoid fever occurred in the following counties: San Francisco, 7; Sacramento, 5; Los Angeles, 4; Fresno, 3; Alameda, Butte, Kern, and Riverside, each 2; and Calaveras, Humboldt, Kings, Lake, Lassen, Madera, Modoc, Plumas, San Bernardino, San Joaquin, Santa Clara, Shasta, Sonoma, Stanislaus, Tehama, Ventura, and Yolo, 1 each.

Further particulars appear in the following table:

*Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths for Current and Preceding Month, for California: November.*

Cause of Death.	Deaths: November.	Proportion per 1,000.	
		November.	October.
ALL CAUSES.....	2,612	1,000.0	1,000.0
Typhoid fever.....	44	16.8	18.5
Malarial fever.....	12	4.6	6.7
Measles.....	3	1.2	4.7
Scarlet fever.....	5	1.9	2.4
Whooping-cough.....	10	3.8	5.5
Diphtheria and croup.....	26	10.0	7.5
Influenza.....	4	1.5	1.6
Other epidemic diseases.....	11	4.2	3.1
Tuberculosis of lungs.....	355	135.9	130.4
Tuberculosis of other organs.....	50	19.1	16.9
Cancer.....	147	56.3	53.0
Other general diseases.....	97	37.1	53.0
Meningitis.....	25	9.6	13.8
Other diseases of nervous system.....	200	76.6	66.8
Diseases of circulatory system.....	406	155.4	153.6
Pneumonia and broncho-pneumonia.....	194	74.3	58.9
Other diseases of respiratory system.....	75	28.7	24.4
Diarrhea and enteritis, under 2 years.....	113	43.3	47.9
Diarrhea and enteritis, 2 years and over.....	25	9.6	11.4
Other diseases of digestive system.....	127	48.6	62.5
Bright's disease and nephritis.....	180	68.9	60.5
Childbirth.....	32	12.3	10.6
Diseases of early infancy.....	74	28.3	29.9
Suicide.....	50	19.1	19.3
Other violence.....	205	78.5	84.1
All other causes.....	142	54.4	53.0

*Geographic Divisions.*—Data for geographic divisions, including the metropolitan area, or "Greater San Francisco," are as follows:

*Deaths from Main Classes of Diseases, for Geographic Divisions: November.*

Geographic Division.	DEATHS: NOVEMBER.										All Other Causes
	Violence	Diseases of Digestive System	Diseases of Respiratory System	Diseases of Circulatory System	Diseases of Nervous System	Cancer	Tuberculosis (All Forms)	Epidemic Diseases	All Causes		
THE STATE ----	,612	115	405	147	225	406	269	265	180	255	345
<i>Northern California</i>											
Coast counties --	358	26	37	9	49	42	38	30	19	45	63
Interior counties	157	6	19	2	31	18	13	15	8	20	25
<i>Central California</i>											
San Francisco --	1,481	64	197	89	113	256	178	156	113	139	176
Other bay counties ----	534	17	70	39	27	84	72	49	49	60	67
Coast counties --	335	7	49	20	31	73	43	33	27	25	27
Interior counties	146	7	23	7	12	26	10	18	12	13	18
<i>Southern California</i>											
Los Angeles ----	466	33	55	23	43	73	53	56	25	41	64
Other counties --	773	25	171	49	63	108	53	79	48	71	106
<i>Northern and Central California</i> --	520	14	117	33	40	78	35	54	34	44	71
<i>Metropolitan area</i> -----	253	11	54	16	23	30	18	25	14	27	35
Rural counties -	1,839	90	234	98	162	298	216	186	132	184	239
All Causes -----	869	24	119	59	58	157	115	82	76	85	94
	970	66	115	39	104	141	101	104	56	99	145

## DEPARTMENT OF BACTERIOLOGY.

DR. A. R. WARD, DIRECTOR.

### EXAMINATIONS MADE IN NOVEMBER 1909.

	Ex.-Pos.	Ex-Neg.	Total.
Diphtheria -----	5	46	51
Malaria -----	1	3	4
Tuberculosis -----	6	14	20
Typhoid -----	5	13	18
Water -----	--	--	--
Miscellaneous -----	--	--	13
Rabies -----	8	--	--
<b>Total -----</b>	<b>106</b>		

# DEPARTMENT OF PURE FOODS AND DRUGS.

PROFESSOR M. E. JAFFA, DIRECTOR.

During the last month the work of the Laboratory has been devoted to the chemical analysis and examination of miscellaneous foods and food products in vinegars, oils, salts, spices, and considerable work on examination of samples of eggs, which appear to have been very much mislabeled.

It is to be hoped that the Laboratory will soon have more extended facilities so that the work may branch out and include original research and investigations which belong to such a department.

No United States Food Inspection Decisions have been issued during the last month, but the following Notice of Judgments has been received at this Laboratory from the office of the Secretary, U. S. Department of Agriculture:

Notice of Judgments numbers 102, 104, and 109 are of special interest to the stock and poultry interests of California. It will be seen by reading these that the United States Department is giving attention to the cattle and poultry foods as well as foods intended for human consumption. The State Laboratory is coöperating with the Federal Government to the same end:

## NOTICE OF JUDGMENTS.

No. 102. *Misbranding of distiller's dried grains.* (As to protein and fat content.)

The facts about this case were as follows:

On December 16, 1907, an inspector of the Department of Agriculture purchased from Henry & Missert, 92-94 Michigan street, Buffalo, N. Y., a sample of distiller's dried grains labeled "R. Distiller's Dried Grains. 26 per cent Protein. 10 per cent Fat. The J. W. Biles Co., Cincinnati, Ohio," which was a part of a shipment by the J. W. Biles Company, Cincinnati, Ohio, to Henry & Missert, Buffalo, N. Y. The sample was subjected to analysis in the Bureau of Chemistry of the United States Department of Agriculture and the following results obtained and stated:

Moisture .....	10.99
Fat .....	9.40
Protein .....	21.22

It was apparent, therefore, that the goods were misbranded, as they were labeled as containing 26 per cent of protein and 10 per cent of fat, whereas they contained only 21.22 per cent of protein and 9.40 per cent of fat. The Secretary of Agriculture having on July 14, 1908, afforded the manufacturers an opportunity to show any fault or error in the findings of the analyst and they having failed to do so, the facts were duly reported to the attorney general and the case referred to the United States attorney for the southern district of Ohio.

No. 103. *Adulteration of eggs.* (Presence of putrid and decomposed animal matter.)

The facts in the case were as follows:

On or about December 22, 1908, an inspector of the dairy and food division of the Pennsylvania Department of Agriculture, acting under authorization from the Secretary of the United States Department of Agriculture to James Foust, dairy and food commissioner of said State, in accordance with regulation 3 of the rules and regulations for the enforcement of the Food and Drugs Act of June 30, 1906, found in the possession of the Pennsylvania Railroad Company at Philadelphia, Pa., twenty-five cases of eggs, which had been delivered for shipment from that city to Louis Lazar, New York, N. Y. Samples of the eggs were procured and subjected to analysis and found to be decomposed and unfit for human consumption.

The facts were reported to the United States attorney for the eastern district of Pennsylvania, by whom libel for seizure under section 10 of the act was promptly filed and prosecution instituted under section 2.

No. 104. *Adulteration and misbranding of stock feed.* (As to presence of rice hulls.)  
The facts about this case were as follows:

On or about March 15, 1909, an inspector of the Department of Agriculture, acting in conjunction with R. E. Stallings, State chemist of the State of Georgia, found in the possession of the Nickajack Milling Company, at Atlanta, Ga., 200 bags of a feed product labeled "Protein 11.00; Fat 6.00; Carbo Hydrates 53.00; Fiber 11.00. Stafolife. Manufactured by Lawrence & Hamilton Feed Co., Ltd., New Orleans, La."; and to each of these bags was attached a tag on which was the following: "Stafolife Feed. Manufactured by Lawrence & Hamilton Feed Co., Limited. New Orleans, La. Guaranteed Analysis. Crude Fiber 11.00; Fat 6.00; Protein 11.00; Carbo Hydrates 53.00. Composed rice bran; corn; cottonseed meal; molasses. Net weight 100 pounds." These goods had been shipped by the manufacturers, the Lawrence & Hamilton Company, from New Orleans, La., to Atlanta Ga., on March 4, 1909. A sample of the product was subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and it was found that, in addition to the ingredients noted on the label, the feed contained 5 per cent of rice hulls. It was evident that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated in that rice hulls had been mixed with and substituted in part for rice bran, corn, cottonseed meal, and molasses, thereby reducing, lowering, and injuriously affecting the quality and strength, and misbranded in that it purported to contain only rice bran, corn, cottonseed meal, and molasses, whereas it contained 5 per cent of rice hulls. These facts were accordingly reported by the Secretary of Agriculture to the United States attorney for the northern district of Georgia on March 27, 1909, and libel for seizure and condemnation was duly filed.

No. 105. *Adulteration and misbranding of a cereal.* (As to presence of wheat.)

The facts in the case were as follows:

On or about March 22, 1909, an inspector of the Department of Agriculture found in the possession of Haas, Baruch & Co., Los Angeles, Cal., 500 sacks of a food product labeled "Iowa Rolled Oats Mixture, Manufactured by Acme Mills Company, Portland, Oregon." The goods had been shipped by the manufacturer, the Acme Mills Company, from Portland, Oregon, to Haas, Baruch & Co., Los Angeles, Cal., on or about January 28, 1909. A sample of the product was subjected to analysis in the Bureau of Chemistry of the United States Department of Agriculture and found to consist of 50 per cent of oats and 50 per cent of wheat. It was apparent, therefore, that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated for the reason that wheat had been substituted in part for the oats, and misbranded in that it was labeled "Iowa Rolled Oats Mixture," whereas it was not a mixture of oats, but a mixture of wheat and oats. On March 23, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the southern district of California and libel for seizure and condemnation was duly filed.

No. 106. *Misbranding of a cane sirup.* (As to presence of glucose.)

The facts in the case were as follows:

On March 16, 1908, an inspector of the Department of Agriculture purchased from the Crawford Grocery Company, Greenville, Miss., a sample of sirup, which was labeled, "Wilder's Uniform Brand Syrup. Canned only by the D. R. Wilder Mfg. Co., Atlanta, Ga.," the same being printed in a quadrangular space formed by an arrangement of the words "Georgia Cane," printed in capital letters, which were represented as being interwoven with cane stalks, and on the opposite side of the cans appeared the following words "Best in the world," "The syrup that made Georgia famous," and on the side of the can in small type together with other descriptive matter, "This package contains eighty-five per cent pure Georgia cane and fifteen per cent pure corn syrup which is added to prevent granulation." The sample was part of a shipment made by the D. R. Wilder Manufacturing Company from Atlanta, Ga., to the Crawford Grocery Company, Greenville, Miss., on or about June 22, 1907.

It was apparent from the analysis that the article was misbranded within the meaning of section 8 of the act, because labeled to represent that it was Georgia cane sirup, whereas it was a mixture of cane sirup and glucose, and the statements in the label, "Georgia cane," "Best in the world," and "The syrup that made Georgia famous," were false and misleading.

The Secretary of Agriculture having on October 5, 1908, afforded the manufacturers an opportunity to show any fault or error in the aforesaid analysis, and they having failed to do so, the facts were, on January 9, 1909, reported to the attorney general and the case referred to the United States attorney for the northern district of Georgia, who filed an information against the said D. R. Wilder Manufacturing Company.

No. 107. *Misbranding of Vermont or maple sugar.* (As to presence of cane sugar.)

The facts in the case were as follows:

On or about January 13, 1909, an inspector of the Department of Agriculture found in the possession of E. M. Sheetz, 505 Twelfth street, N. W., Washington, D. C., 150 pails (4,970 pounds) of sugar which had been manufactured by J. M. Beeman & Son, Fairfax, Vt., and shipped to said Sheetz by the J. M. Washburne Company, of 50 Broadway, New York. The pails bore no label or other marks which would indicate the nature of the contents and the consignment was sold, billed, and shipped as

“Vermont sugar.” The contents of each pail had the color and other appearances of maple sugar. A sample of this product was collected by the inspector and subjected to analysis in the Bureau of Chemistry of the United States Department of Agriculture.

It was apparent from the analysis that the product was a mixture of cane and maple sugar and was misbranded within the meaning of sections 7 and 8 of the act, because it had been invoiced and sold under the name of “Vermont sugar” and had the appearance, color, and general semblance of a food product known as maple sugar or “Vermont sugar,” and bore no label, brand, mark, or device of any kind showing the true character of the article. On January 14, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the District of Columbia and libel for seizure and condemnation under section 10 of the act was duly filed.

No. 108. *Misbranding of preserves. (Underweight.)*

The facts in the case were as follows:

On or about March 30, 1909, an inspector of the Department of Agriculture found in the possession of Hugo, Schmeltzer & Co., San Antonio, Tex., 190 cases (each containing 4 dozen cans) of preserves labeled and branded, “One Full Pound Convenient Preserves, Wm. Numsen Sons, Baltimore, Md.” These goods had been shipped to said Hugo, Schmeltzer & Co. by Wm. Numsen & Son, from Baltimore, Md., on or about October 24, 1908. A number of the cans were weighed in the Bureau of Chemistry of the United States Department of Agriculture, and the average net weight was found to be 14½ ounces. The goods were, therefore, misbranded within the meaning of section 8 of the act, and on March 31, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the western district of Texas, and libel for seizure and condemnation was duly filed.

No. 109. *Adulteration and misbranding of cottonseed meal. (As to presence of cottonseed hulls.)*

The facts in the case were as follows:

On or about April 22, 1909, an inspector of the Department of Agriculture found in the possession of F. A. Nave, Attica, Ind., 600 sacks of a product purporting to be cottonseed meal, which had been shipped to him on or about April 2, 1909, by the J. Lindsay Wells Company, Memphis, Tenn. An analysis of a sample taken from this shipment was made in the Bureau of Chemistry, United States Department of Agriculture, and found to consist of approximately 50 per cent of cottonseed hulls. It was apparent that the product was both adulterated and misbranded within the meaning of sections 7 and 8 of the act; adulterated for the reason that cottonseed hulls had been mixed and packed with the cottonseed meal so as to reduce and lower and injuriously affect its quality and strength, and misbranded for the reason that it had been shipped, invoiced, and sold under the name of cottonseed meal, whereas the product contained approximately 50 per cent of cottonseed hulls. Accordingly, on April 22, 1909, the Secretary of Agriculture reported the facts to the United States attorney for the district of Indiana, and libel for seizure and condemnation under section 10 of the act was duly filed.

No. 110. *Misbranding of sirup. (As to quality.)*

The facts in the case were as follows:

On or about March 30, 1909, an inspector of the Department of Agriculture found in the possession of the Lawrence Wardenburg Mercantile Company, Trinidad, Colo., 19 cases (each containing 10 cans) of sirup, labeled and branded “10 one-gallons. Star Syrup. Farrell & Company, Omaha, Neb.”; 19 cases (each containing 16 cans) of sirup, labeled and branded “16 half-gallons Star Syrup. Farrell & Company, Omaha, Neb.”; and 12 cases (each containing 24 cans) of sirup, labeled and branded “24 quarts. Star Syrup. Farrell & Company, Omaha, Neb.” These goods had been shipped to the Lawrence Wardenburg Mercantile Company by Farrell & Co., the manufacturers, from Omaha, Nebr., during September, 1908, and January, 1909. A number of the cans were procured and subjected to analysis in the Bureau of Chemistry, United States Department of Agriculture, and it was found that the cans from the cases labeled “10 one-gallons” contained 0.723 gallon, making a shortage of 27.7 per cent; that those from the cases labeled “16 half-gallons,” contained 0.356 gallon, making a shortage of 28.8 per cent; and those from the cases labeled “24 quarts” contained 0.716 quart, making a shortage of 28.4 per cent. The goods were therefore misbranded within the meaning of section 8 of the act, and on March 30, 1909, the facts were reported by the Secretary of Agriculture to the United States attorney for the district of Colorado, and libel for seizure and condemnation was duly filed.

No. 111. *Misbranding of catsup. (As to amount of benzoate of soda present.)*

The facts in the case were as follows:

On or about September 18, 1908, E. F. Ladd, food commissioner of North Dakota, acting under authorization conferred on him by the Secretary of the United States Department of Agriculture, in accordance with regulation 3 of the rules and regulations for the enforcement of the Food and Drugs Act, found in the possession of Park, Grant & Morris, at Fargo, N. Dak., 65 one-gallon jugs and 85 one-gallon tin packages

of a food product labeled, "Bordeaux Brand Tomato Catsup, Prepared by the Van Camp Packing Co., Indianapolis, Ind., U. S. A. Ingredients Tomatoes, Sugar, Vinegar, Salt, Cloves, Allspice, Cayenne Pepper, Onions & 1-10 of 1% of Benzoate of Soda. Net Wt. about 14 oz." A sample of this product was analyzed by Doctor Ladd and found to contain 0.205 per cent of benzoate of soda. The Van Camp Packing Company having been afforded an opportunity to show any fault or error in the aforesaid analysis and they having failed to do so, the facts were reported to the United States attorney for the district of North Dakota.

#### **NOTE ON THE USE OF SULPHUR DIOXIDE IN MEAT AND MEAT FOOD PRODUCTS.**

Questions have been asked concerning the use of sulphur dioxide or salts of sulphurous acid in the preparation of meats or meat food products in this State. The ruling of the State Board of Health on this question is that the use of sulphurous acid or any of its salts in the preparation of meat or meat food products is not permitted. This ruling is based upon the declaration of the Secretary of Agriculture concerning preservatives allowed in meat and meat food products.

#### **A WARNING TO BARBERS.**

It should be thoroughly understood by barbers and hair dressers that the use of wood alcohol in any of the hair preparations or hair tonics is prohibited under the Drug Act.

The necessity of issuing this warning has been made apparent by the preparations received and questions asked concerning such use of wood alcohol.

## **DEPARTMENT OF EPIDEMIOLOGY.**

WILLIAM F. SNOW.

During the past month scarlet fever has appeared at twelve points in the upper Sacramento Valley, but no direct connection was established between these outbreaks. Scarlet fever also appeared at five other widely separated points in the State. Six communities have had a few smallpox cases. Seven outbreaks of diphtheria have been reported. Measles and whooping-cough have appeared in various places, but these diseases, together with a number of others, are too incompletely reported to note here. The deaths from typhoid fever show that a number of foci have existed during the month, but no general outbreak has occurred.

In all these instances the health boards have acted promptly and have effectively controlled the further spread of the diseases.

It has been considered of sufficient interest to the general public to publish in connection with the subject-matter of this and the preceding Bulletin the following series of tables showing the details of deaths caused by various tropical diseases which are attempting to establish themselves in California.

These tables also illustrate the importance of full and accurate data on death certificates. Our health officials could make epidemiological studies of all these diseases which would prove most valuable in directing our fights against them.

I. The following list of deaths from plague is given to show that a considerable number of persons have actually died of plague since its reappearance in 1907, and that these persons were not largely among Chinese, as has been popularly supposed.\* The range of occupation mentioned is also of interest. This disease seems now fully under control, and we have a basis for saying to the world that this is so, which is beyond dispute. However, just as we fight fire most wisely by maintaining intact our fighting organization, so we will do wisely to maintain our organization for watching the plague.

TABLE I. Plague.

Certif- certificate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Contributory Cause.	Duration of Illness.
116-523	Male.....	24 yrs..	White—Finland	Sailor.....	May 26, 1907	San Francisco...	3 days	Bubonic plague (sus- pected). Diagnosis pending cultural examination	2 days
121-258	Male.....	21 yrs..	Russian.....	Seaman.....	Aug. 12, 1907	San Francisco...	4 days	Plague: Bubonic and pneumonic	4 days
131-210	Female..	23 yrs..	White—Italy	Laborer.....	Aug. 12, 1907	San Francisco...	3 days	Bubonic plague	3 days
131-218	Male.....	20 yrs..	White—Spain	Aug. 13, 1907	San Francisco...	3 yrs..	Bubonic plague	Physician in at- tendance 2 days.	Physician in at- tendance
131-221	Male ..	24 yrs..	White—Spain	Laborer.....	Aug. 13, 1907	San Francisco...	3 yrs..	Bubonic plague	3 days
131-426	Male ..	63 yrs..	Irish.....	Tanner.....	Aug. 24, 1907	San Francisco...	37 yrs..	Bubonic plague	Physician in at- tendance 2 days.
131-480	Male ..	48 yrs..	Irish.....	Shoemaker.....	Aug. 28, 1907	San Francisco...	—	Bubonic plague	Physician in at- tendance 2 days.
136-68	Male ..	26 yrs..	Italian .....	Scavenger .....	Sept. 4, 1907	San Francisco...	6 yrs..	Bubonic plague	Physician in at- tendance 3 days,
136-135	Male ..	40 yrs..	Irish .....	Laborer .....	Sept. 9, 1907	San Francisco...	39 yrs..	Bubonic plague	Physician in at- tendance 4 days.
136-158	Male ..	47 yrs..	Italian .....	Hotel man .....	Sept. 9, 1907	San Francisco...	—	Bubonic plague	—
136-186	Male ..	30 yrs..	White—Chile .....	Unknown .....	Sept. 10, 1907	San Francisco...	—	Bubonic plague	—
136-191	Male ..	65 yrs..	Chinese .....	Chinese .....	Sept. 11, 1907	San Francisco...	—	Bubonic plague	—
136-230	Male ..	22 yrs..	Chinese .....	Italian .....	Sept. 11, 1907	San Francisco...	—	Bubonic plague	—
136-255	Male ..	56 yrs..	White—Portugal	Laborer .....	Sept. 12, 1907	San Francisco...	—	Pneumonic plague	—
136-211	Male ..	35 yrs..	White—Greece	Unknown .....	Sept. 13, 1907	San Francisco...	37 yrs..	Pneumonic plague	—
136-225	Male ..	32 yrs..	White—Hungary	Fruit-vender .....	Sept. 13, 1907	San Francisco...	—	Bubonic plague	—
136-245	Female ..	3 yrs..	White—Cal.	None .....	Sept. 14, 1907	San Francisco...	—	Bubonic plague	—
136-248	Male ..	38 yrs..	White .....	None .....	Sept. 14, 1907	San Francisco...	—	Bubonic plague	—
136-282	Male ..	7 mos.	White .....	None .....	Sept. 14, 1907	San Francisco...	—	Bubonic plague	—
136-276	Female ..	37 yrs..	German .....	Candy-maker .....	Sept. 15, 1907	San Francisco...	—	Bubonic plague	—
136-280	Male ..	9 yrs..	White .....	None .....	Sept. 15, 1907	San Francisco...	5 yrs..	Bubonic plague	—
136-294	Male ..	30 yrs..	Chinese .....	Laborer .....	Sept. 18, 1907	San Francisco...	—	Toxemia, with gen- eral exhaustion due to bubonic plague	—
133-234	Male ..	12 yrs..	White .....	None .....	Sept. 19, 1907	San Francisco...	—	Bubonic plague	—
136-305	Female ..	—	White .....	None .....	Sept. 19, 1907	San Francisco...	—	Bubonic plague	—

\*There are 89 deaths listed. These occurred in a total list of 182 cases. This is approximately 50 per cent of the cases,

TABLE I. Plague—Continued.

Certificate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Contributory Cause.	Duration of Illness.
136-367	Male	20 yrs.	Filipino	Housewife	Sept. 20, 1907	San Francisco	30 yrs...	Broncho-pneumonic and septicemic plague	1½ days
136-392	Female	50 yrs., 7 mos.	White—Mo.	Housewife	Sept. 21, 1907	San Francisco	30 yrs...	Lobar-pneumonia— positive plague	7 days
136-405	Female	1 mo.	White—Cal. (Mother So. Am.)	Housewife	Sept. 22, 1907	San Francisco	30 yrs...	Bubonic plague	1 day
136-449	Male	3 yrs.	White—Illinois German?	Housewife	Sept. 26, 1907	San Francisco	30 yrs...	Bubonic plague	1 day
136-460	Male	10 yrs.	Italian	None	Sept. 26, 1907	San Francisco	30 yrs...	Plague	1 day
136-488	Female	1 yr.	White—Cal.	None	Sept. 27, 1907	San Francisco	15 yrs...	Bubonic plague	1 day
136-509	Male	51 yrs.	White—Italy	Shoemaker	Sept. 27, 1907	San Francisco	15 yrs...	Bubonic plague	1 day
136-504	Male	27 yrs.	Japanese	Type compos- itor	Sept. 28, 1907	San Francisco	2 yrs...	Bubonic plague	1 day
141-6	Male	25 yrs.	White—Mexico	Housewife	Sept. 28, 1907	San Francisco	2 yrs...	Bubonic plague	1 day
141-92	Female	10 yrs., 9 mos.	White—Cal. Italian?	None	Oct. 1, 1907	San Francisco	10 yrs...	Gastro enteritis	1½ days
141-71	Male	1 yr.	White—Cal.	None	Oct. 4, 1907	San Francisco	5 yrs...	Bubonic plague	1 day
138-291	Female	34 yrs.	Japanese	Housewife	Oct. 5, 1907	Oakland	5 yrs...	Bubonic plague	7 days
141-117	Male	26 yrs.	White—Cal. German?	Teamster	Oct. 6, 1907	San Francisco	30 yrs...	Bubonic and septicemic plague	1 day
141-236	Male	30 yrs.	White—Italy	Laborer	Oct. 6, 1907	San Francisco	30 yrs...	Bubonic plague	1 day
141-173	Female	5 yrs.	White—Cal.	None	Oct. 7, 1907	San Francisco	30 yrs...	Bubonic plague	1 day
141-182	Female	38 yrs.	White—Cal. Japanese	Unknown Laundryman	Oct. 7, 1907	San Francisco	30 yrs...	Septicemic plague	1 day
141-189	Male	18 yrs.	Japanese	Unknown Laundryman	Oct. 8, 1907	San Francisco	30 yrs...	Septicemic—bubonic plague	1 day
141-287	Female	68 yrs.	White—Spain	Housewife	Oct. 10, 1907	San Francisco	30 yrs...	Plague pneumonia	1 day
141-283	Male	71 yrs.	White—German	Housewife	Oct. 11, 1907	San Francisco	30 yrs...	Septicemic plague	1 day
141-250	Male	42 yrs., 9 mos.	White—N. Y. Irish?	Ironmolder	Oct. 12, 1907	San Francisco	20 yrs...	Septicemia, due to plague	1 day
141-256	Male	54 yrs.	White—Germany Polish?	Coffee sales- man	Oct. 14, 1907	San Francisco	30 yrs...	Septicemic plague	1 day
141-295	Male	62 yrs.	White—Italian	Housewife	Oct. 14, 1907	San Francisco	30 yrs...	Septicemic plague	1 day
141-316	Female	28 yrs.	Black—Ge.	Housewife	Oct. 17, 1907	San Francisco	30 yrs...	Erysipelas	23 days

138-237	Female	38 yrs.	White—Wis.	None	Oct. 17, 1907	Oakland	26 yrs.	Bubonic plague
141-348	Male	46 yrs.	Chinese	None	Oct. 17, 1907	San Francisco	50 yrs.	Bubonic plague
141-345	Male	31 yrs.	White—Germany	Mechanic	Oct. 18, 1907	San Francisco	50 yrs.	Bubonic plague— septicemic
141-423	Female	65 yrs.	Irish	None	Oct. 21, 1907	San Francisco	—	Septicemic plague
141-408	Male	12 yrs., 9 mos.	White—Cal. German?	Schoolboy	Oct. 22, 1907	San Francisco	—	Septicemic plague
141-427	Male	16 yrs.	White—Cal. Italian?	Schoolboy	Oct. 23, 1907	San Francisco	—	Septicemic plague— primary lesion in post-cervical glands
141-446	Female	16 yrs.	White—Cal.	None	Oct. 24, 1907	San Francisco	16 yrs.	Septicemic plague
141-469	Female	32 yrs.	White—Cal.	Housewife	Oct. 26, 1907	San Francisco	—	Erysipelas
141-505	Male	47 yrs.	Swiss	Laborer	Oct. 28, 1907	San Francisco	20 yrs.	Septicemic plague
141-554	Male	10 yrs..	White—Cal.	—	Oct. 29, 1907	San Francisco	10 yrs.	Tuberculous leptomeningitis
141-544	Male	29 yrs.	White—Russia	Painter	Oct. 30, 1907	San Francisco	29 yrs.	Septicemic plague
146-30	Male	56 yrs.	Chinese	Laundryman	Oct. 30, 1907	San Francisco	30 yrs.	Bubonic plague
146-13	Male	16 yrs.	White—Cal.	—	—	—	—	—
146-13	Male	16 yrs.	Italian	Desk-maker	Oct. 31, 1907	San Francisco	16 yrs.	Septicemic plague
143-137	Male	33 yrs.	White—Italy	Peddler	Nov. 3, 1907	Oakland	33 yrs.	Bubonic plague
146-74	Male	57 yrs.	Italian	Laborer	Nov. 4, 1907	San Francisco	—	Septicemic plague
146-112	Male	42 yrs.	Chinese	Cook	Nov. 4, 1907	San Francisco	—	Septicemic plague
146-159	Female	2 yrs., 10 mos.	White—Cal. Eng.—German?	—	—	—	—	—
146-219	Male	37 yrs..	Italian	None Teacher and linguist	Nov. 9, 1907	San Francisco	—	Septicemic plague
146-239	Female	9 yrs.	White—Italy	Schoolgirl	Nov. 11, 1907	San Francisco	5 yrs.	Septicemic plague
143-24	Male	46 yrs., 7 mos.	Swiss	Tinker	Nov. 12, 1907	Alameda Co.	9 yrs.	Plague
146-324	Male	37 yrs..	White—N. J.	Undertaker	Nov. 19, 1907	San Francisco	24 yrs.	Bubonic plague
146-369	Male	20 yrs..	Chinese	Laundryman	Nov. 20, 1907	San Francisco	9 yrs.	Septicemic plague
146-389	Female	70 yrs..	White—Germany	—	Nov. 21, 1907	San Francisco	—	Bubonic plague
143-113	Male	20 yrs..	White—Cal.	Curtain hang'r	Nov. 25, 1907	Berkeley	20 yrs.	Bubonic plague in pneumonic form
146-399	Female	6 yrs..	White—Cal.	None	Nov. 22, 1907	San Francisco	—	Septicemic plague
146-439	Male	40 yrs..	White—Cal. Polish—German?	Expressman	Nov. 25, 1907	San Francisco	—	Septicemic plague

TABLE I. Plague—Continued.

Certif- cate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Diagnosis.	Contributory Cause.	Duration of Illness.
151- 61	Female.	About 40 yrs..	White .....			Nov. 29, 1907	San Francisco			
151- 75	Male....	2 yrs..	White—Cal.		Dec. 2, 1907	San Francisco				
151-121	Male....	59 yrs., 7 mos..	White—German— White—Cal.	Cook Housewife .....	Dec. 3, 1907 Dec. 8, 1907	San Francisco San Francisco	31 yrs..	Septicemic plague Plague pneumonia	Physician in at- tendance 6 days.	
151-194	Female.	27 yrs..		Clerk .....	Dec. 9, 1907	San Francisco				
151-230	Male....	23 yrs.	Japanese .....		Dec. 16, 1907	San Francisco	3 mos..	Septicemic plague	Physician in at- tendance 17 days.	
151-418	Male....	49 yrs., 11 mos.	White—Ill. White—Cal.	Teamster .....						
148-271	Female.	3 yrs..	White—Cal. Birthpl. father Azores .....	None .....	Dec. 22, 1907	Oakland .....	3 yrs..	Acute septicemia due to bubonic plague		
148-273	Female.	52 yrs..	White—Cal.	Housewife .....	Dec. 22, 1907	Oakland .....				5 days
151-532	Male....	75 yrs..	White—France	Carpenter .....	Dec. 24, 1907	San Francisco	45 yrs..	Bubonic plague	Mitral and aortic insufficiency	6 days
151-582	Female.	58 yrs..	White—Ireland— Japanese .....	Housewife .....	Dec. 26, 1907	San Francisco	58 yrs..	Septicemic plague	Bronchial pneu- monia	
156-118	Male....	27 yrs..		Vegetable merchant .....	Jan. 7, 1908	San Francisco	5 yrs..	Septicemic plague		
158-276	Female.	8 yrs..	White—N. Y.	Schoolgirl .....	Feb. 28, 1908	Oakland .....		Bubonic plague		
188-323	Male....	7 yrs..	White—Cal. Portuguese? .....		July 14, 1908	Concord (Con- tra Costa Co.)	7 yrs..	Bubonic plague		
183-228	Male....	37 yrs..	White—Cal. Irish? .....	Contractor .....	July 21, 1908	Oakland .....	37 yrs..	Bubonic plague		
183-348	Female.	24 yrs..	White—Cal. Portuguese? .....	None .....	July 25, 1908	Martinez (Con- tra Costa Co.)				
248- 21	Male....	13 yrs..	White—Cal.	Schoolboy .....	Aug. 12, 1909	Near Hayward (Alameda Co.)	13 yrs..	Bubonic plague Pestis bubonica		2 days

II. The following list of deaths from beri-beri is given to show that this disease is present and widely, though sparsely, distributed. Too little is known about this disease to make generalizations that will stand criticism. A similar number of deaths in Japan would argue some 500 to 600 existing cases.

TABLE II. Beri-beri.

Certificate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Contributory Cause.	Duration of Illness.
97-327	Male	40 yrs.	Japanese	Laborer	Jan. 3, 1907	Watsonville (Santa Cruz Co.)	.....	Beri-beri	.....
106-327 105-317	Male Male	23 yrs. 36 yrs.	Japanese Japanese	Farmer Rancher	Mar. 17, 1907 Mar. 29, 1907	San Francisco Fresno	5 mos.	Beri-beri and gastritis Beri-beri	14 days 15 days Physician in at- tendance 4 dys.
113-329 108-408 122-261	Male Male Female	31 yrs. 28 yrs. 1 mo.	Japanese Japanese Japanese	Laborer Laborer	April 16, 1907 April 21, 1907 June 21, 1907	Oroville Oroville Pajaro (Santa Cruz Co.)	.....	Beri-beri General peritonitis	10 days
121-552	Male	40 yrs.	Japanese	Farmer	June 29, 1907	San Francisco	1 mo. 2 yrs.	Beri-beri Beri-beri	1 month Physician in at- tendance 4 dys.
125-322 127-158	Male Female	31 yrs. 38 yrs.	Japanese Japanese	Laborer None	July 2, 1907 July 18, 1907	Sacramento Alviso (Santa Clara Co.)	3 mos.	Beri-beri	10 months
124-405	Male	19 yrs.	Japanese	Farmer	July 26, 1907	Los Angeles	3 yrs.	Beri-beri and acute peritonitis	1 year
132-362	Male	36½ yrs.	Japanese	Farmer	Aug. 14, 1907	Santa Rosa (Sonoma Co.)	1 yr. 3 yrs.	Beri-beri Beri-beri Beri-beri—heart failure	26 days
152-246 155-386	Male Male	25 yrs. 25 yrs.	Japanese Japanese	Laborer Farmer	Dec. 27, 1907 Jan. 13, 1908	San Jose Sacramento	.....	Beri-beri Beri-beri Beri-beri—heart failure	30 days 1 month
172-219	Female	21 yrs.	Japanese	Housekeeper	April 13, 1908	San Jose	5 yrs.	Acute dilatation of the heart	20 days
176-290	Male	43 yrs.	Japanese	Laborer	May 16, 1908	San Francisco	3 yrs.	Beri-beri	2 days
184-354 191-83	Male Male	21 yrs. 37 yrs.	Japanese Chinese	Farmer Sailor	July 27, 1908 Aug. 3, 1908	Los Angeles San Francisco	3 yrs.	Cardiac failure Kakke (beri-beri)	Physician in at- tendance 4 dys. About 6 months
205-321 206-320 225-290	Male Male Female	37 yrs. 42 yrs. 22 yrs.	Japanese German Japanese	Rancher Sailor Housewife	Nov. 15, 1908 Nov. 18, 1908 Mar. 11, 1909	Sacramento San Francisco Sacramento	1 yr. 15 yrs.	Beri-beri Beri-beri Heart paralysis	45 days 4 months Physician in at- tendance 1 day
223-444	Male	40 yrs.	Japanese	Laborer	Mar. 15, 1909	Presno	.....	Beri-beri	Physician in at- tendance 1 yr., 5 months
245-79 251-269 257-313	Male Male Male	29 yrs. 36 yrs. 35 yrs.	Japanese Chinese Japanese	Laborer Sailor Laborer	July 1, 1909 Aug. 20, 1909 Sept. 27, 1909	Monterey San Francisco Vacaville (Solano Co.)	6 yrs. 1½ mos.	Beri-beri Beri-beri Beri-beri ("from mother's milk")	30 days Asthenia
255-359	Male	1½ mos.	Japanese	.....	Sept. 30, 1909	Sacramento	.....	Gastritis	21 days

III. The following list of deaths from amoebic dysentery indicates the range of this disease in California. It is probably destined to be one of the serious problems of tropical disease with which we must contend.

TABLE III. Amoebic Dysentery.

Certificate No.	Sex.	Age.	Color or Race—Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State	Diagnosis.	Contributory Cause.	Duration of Illness.
114-471	Male	64 yrs.	White—Ill.	Retired	May 18, 1907	Pasadena	1 year.	Amoebic diarrhoea or tropical dysentery—chronic amoebic		2½ years
121-483	Male	25 yrs.	White—Ind.	Ex-soldier	June 22, 1907	San Francisco	2½ yrs...	Dysentery—chronic amoebic	Asthma	Physician in attendance 1 day
123-239	Male	40 yrs.	Chinese		July 19, 1907	Oakland	20 yrs...	Amoebic dysentery		About 1 year
129-232	Male	80 yrs.	White—Nova Scotia	Laborer	July 20, 1907	Oakland		Amoebic dysentery		Physician in attendance 6 dys.
131- 46	Female	62 yrs.	White—N. Y. Irish?	Housewife	Aug. 1, 1907	San Francisco	48 yrs...	Amoebic dysentery		Physician in attendance 31 dys.
134-131	Male	26 yrs. 11 mos.	Mexican	Merchant	Sept. 6, 1907	Los Angeles	3 days.	Abscess of liver	Amoebic dysentery (About 3 mos.)	30 days
174-205	Male	48 yrs.	White—N. Y.	Ry. conductor	May 11, 1908	Los Angeles		Amoebic dysentery		Physician in attendance 4 mos.
189-267	Male	27 yrs.	White—N. Y. Irish	Civil engineer	Aug. 17, 1908	Los Angeles		Amoebic dysentery		40 days
201-190	Female	63 yrs.	Unknown	Unknown	Oct. 9, 1908	San Francisco		Acute bacillary dysentery		Physician in attendance 3 dys.
201-503	Female	62 yrs.	Irish	Domestic	Oct. 31, 1908	San Francisco		Amoebic dysentery		15 days
246-271	Male	30 yrs.	White—Norwg'n?	Sailor	July 16, 1909	San Francisco		Perforation bowel with intestinal ulcers (30 dys. duration)		30 days
254-284	Male	35 yrs.	Mexican	Laborer	Aug. 15, 1909	Los Angeles	6 mos.	Amoebic dysentery with shock and hemorrhage (3 hrs. duration)		1 year
251-477	Male	36 yrs.	White—Cal.	Am. seaman	Aug. 31, 1909	San Francisco		Amoebic dysentery, abscess of liver	General peritonitis (2 days)	35 days
Local No. 4833	Male	32 yrs.	Austrian	Painter	Oct. 2, 1909	San Francisco	6 yrs...	Thrombosis of superior mesenteric artery, causing ileus	Amoebic dysentery	Intestinal parasites
Local No. 3349	Male	38 yrs. 9 mos.	White—Pa.	Produce dealer	Oct. 21, 1909	Los Angeles	4 yrs...	Pernicious anemia		Several years
Local No. 5274	Male	50 yrs.	German	Am. seamen	Oct. 23, 1909	San Francisco	Unknown	Amebiasis—myocarditis	Exhaustion	9 months
Local No. 1470	Female	40 yrs.	Irish	Housewife	Nov. 10, 1909	Oakland	16 yrs...	Amoebic dysentery		
Local No. 73	Male	49 yrs. 6 mos.	White—Germany	Soldier	Nov. 13, 1909	Monterey (Presidio)	1 yr. 4 mos..	Chronic parenchymatous nephritis	Chronic recurrent amoebic dysentery	51 days

IV. The following deaths from hookworm have occurred in California. [Two doubtful cases are included to show the importance of physicians stating definitely the type of intestinal parasite.]

TABLE IV. Hookworm.

Certifi- cate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Contributory Cause.	Duration of Illness.
109-308	Male	3 yrs.	White—N. Y. German?		Apr. 15, 1907	Inglewood (Los A. Co.)	3 yrs. --	Convulsions	Physician in at- tendance 1 day. Probably 1 year.
116-30	Male	17 yrs.	White—Porto Rico. French?	Ship-cleaner	May 1, 1907 Feb. 19, 1908	San Francisco Conner (Kern Co.)	2½ yrs. --	Inanition	
158-566	Female	2 yrs.	White—Ark.				1½ yrs. --	Convulsions	
174-238	Male	32 yrs.	White—Mont.	Farmer	May 14, 1908	Los Angeles	4 mos. --	Gastro enteritis	Physician in at- tendance 7 wks.

V. The following partial list of deaths from malaria for 1908 is given to show the importance of tracing the source of infection in each case, if possible. These deaths have occurred in the non-malarial sections of California, but they represent 21 per cent of the total deaths for that year. With interested effort put forth by both attending physicians and relatives, the majority of such cases could be traced. The complete records would be invaluable commercially as well as statistically.

TABLE V. *Malaria.*

Certif- certificate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Diagnosis.	Contributory Cause.	Duration of Illness.
155-572 167-107	Female-Male	6 yrs. 7 yrs., 6 mos.	Canadian White—Cal.		Jan. 21, 1908	San Diego	2 mos...	Cerebral effusion	Malarial fever (17 days)	10 days
166-165	Male	21 yrs., 11 mos.	White—Mass. Irish?	Plumber	Mar. 3, 1908	Near Paso Ro- biles (San Luis Obispo)	7½ yrs...	Remittent fever	General debility	14 days
169-433 174-360	Female-Male	17 yrs. 33 yrs.	Mexican Caucasian— Tenn.		Mar. 8, 1908	San Francisco	7 yrs.	Pernicious malarial fever	General debility Intermittent fever	1½ mos. 17 days
183-89	Female	56 yrs.	Miner Housewife		Apr. 30, 1908	Los Angeles	8 yrs...	Acute gastro enteritis	Gastritis	40 days
187-237	Female	57 yrs., 6 mos.	English	Housekeeper	May 27, 1908	Los Angeles	5 yrs...	Malarial fever	Malarial fever caus- ing congestion of spleen	2 mos...
186-481	Male	41 yrs.	White—Or.	R. R. manager	July 30, 1908	San Jose	18 yrs...	Apoplexy	Malaria and bilious- ness	Some weeks
191-104	Male	66 yrs.	Irish	Shoe merchant	July 25, 1908	San Francisco	29 yrs...	Malarial cachexia in- ducing splenic and hepatic hypertrophy	Obstruction of por- tal circulation, por- tals, etc., 200 days	800 days
194-165	Male	59 yrs.	Canadian	Contractor	Aug. 7, 1908	San Francisco	45 yrs...	Intermittent fever	Phlebitis of saphe- nous vein (14 days)	41 days
196-263 194-510	Male-Male	4 mos. 65 yrs., 10 mos.	White—Cal Caucasian—Ohio English?		Sept. 6, 1908	Los Angeles	29 yrs...	Chronic malarial ca- chexia	Anemia	2 weeks
201-246 203-188	Male-Female	35 yrs. 78 yrs.	Black German	Retired soldier	Sept. 17, 1908	San Francisco	4 mos...	Sawtelle (Los Angeles Co.).	Chronic catarrhal angiocholitis	Years
204-495	Female	69 yrs.	White—Ill.	Unknown	Oct. 11, 1908 Nov. 13, 1908	San Oakland	2 yrs...	Pernicious malaria	Malarial poisoning and age	5 days
212-272	Male	76 yrs.	White—N. Y.			Sawtelle (Los Angeles Co.)	36 yrs...	Pernicious remittent fever	Malaria (several years)	4 days
211-435	Male	54 yrs.	Chinese			San Jose	25 yrs...	Pernicious anemia	Several months	Several months
						San Francisco	13 yrs...	Malarial fever	30 days	

VI. The following table of "chronic dysentery" deaths is given to show again the importance of citizens' and physicians' co-operation in recording causes of death. These may none of them have been amoebic or bacillary cases, but they are suggestive.

TABLE VI. Chronic Dysentery.

Certifi- cate No.	Sex.	Age.	Color or Race— Nationality.	Occupation.	Date of Death.	Place of Death.	Length of Residence in State.	Contributory Cause.	Duration of Illness.
105- 51	Male	74 yrs..	White—Ohio	Contractor	Mar. 7, 1907	Bridgeport (Mono Co.)	Chronic dysentery	Anemia	20 years
114-153	Male	47 yrs..	White—Maine	Hotel man	May 7, 1907	Los Angeles	Dysentery	Anemia	8 years
122- 69	Male	55 yrs.	Chinese	Laborer	June 25, 1907	Stockton (San Joaquin Co.)	35 yrs.		
188-535	Male	40 yrs..	White—N. Y.	Laborer	Aug. 21, 1908	Bakersfield (Kern Co.)	55 yrs.	Dysentery	3 months
199-194	Female	50 yrs..	English		Oct. 9, 1908	Los Angeles	40 days	Acute sepsis	Physician in at- tendance 9 mos.
217-330	Male	17 yrs..	White—Cal.	None	Jan. 31, 1909	Redding (Shasta Co.)	17 yrs.	Dysentery	1 year
246-326	Male	32 yrs..	Chinese	Laborer	July 21, 1909	San Francisco	11 days	Intestinal hem'rhage	
246-333	Male	26 yrs..	Irish	Porter	July 22, 1909	San Francisco	2 yrs.	Chronic dysentery	Physician in at- tendance 28 dys.
250- 68	Female	53 yrs.	White	Clerk	Aug. 24, 1909	Near Ukiah (Men'cino Co.)		Acute colitis	
								Exhaustion	Several months

## LIST OF COUNTY HEALTH OFFICERS.

<i>County.</i>	<i>Health Officer.</i>	<i>Address.</i>
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Alpine .....		
Amador .....	Dr. E. E. Endicott.....	Jackson
Butte .....	Dr. J. E. Knauss.....	Oroville
Calaveras .....	Dr. E. W. Weirich.....	Angels Camp
Colusa .....	Dr. W. T. Rathbun.....	Colusa
Contra Costa .....	Dr. J. Wallace DeWitt.....	Antioch
Del Norte .....		
El Dorado .....	Dr. S. H. Rantz.....	Placerville
Fresno .....	Dr. G. L. Long.....	Fresno
Glenn .....	Dr. J. A. Randolph.....	Willows
Humboldt .....	Dr. J. H. Mallory.....	Eureka
Imperial .....	Dr. E. E. Patten.....	Imperial
Inyo .....	Dr. I. J. Woodin.....	Independence
Kern .....	Dr. W. S. Fowler.....	Bakersfield
Kings .....	Dr. W. H. Miller.....	Hanford
Lake .....	Dr. W. E. Upton.....	Kelseyville
Lassen .....	Dr. E. C. Houston.....	Bieber
Los Angeles .....	Dr. O. R. Stafford.....	3754 Vermont ave., Los Angeles
Madera .....	Dr. Mary R. Butin.....	Madera
Marin .....	Dr. J. H. Kuser.....	Novato
Mariposa .....	Dr. H. Kylberg.....	Mariposa
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Merced .....	Dr. W. E. Lilley.....	Merced
Modoc .....	Dr. John Stile.....	Alturas
Mono .....		
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Napa .....	Dr. Adolph J. Kahn (County Physician).....	Napa
Nevada .....	Dr. John T. Jones.....	Grass Valley
Orange .....	Dr. C. D. Ball.....	Santa Ana
Placer .....	Dr. G. H. Fay.....	Auburn
Plumas .....	Dr. G. B. Lasswell.....	Quincy
Riverside .....	Dr. Geo. E. Tucker.....	Riverside
Sacramento .....	Dr. Hugh Beattie.....	Elk Grove
San Benito .....	Dr. R. G. Curtis.....	Hollister
San Bernardino .....	Dr. D. C. Strong.....	San Bernardino
San Diego .....		
San Francisco .....	Dr. R. G. Brodrick.....	San Francisco
San Joaquin .....	Dr. C. L. Six.....	Stockton
San Luis Obispo.....		
San Mateo .....	Dr. W. G. Beattie.....	Colma
Santa Barbara .....	Dr. J. C. Bainbridge.....	Santa Barbara
Santa Clara .....	Dr. Wm. Simpson.....	San Jose
Santa Cruz .....		
Shasta .....	Dr. F. Stabel.....	Redding
Sierra .....	Dr. R. B. Davy.....	Downieville
Siskiyou .....	Dr. F. J. McNulty (County Physician).....	Yreka
Solano .....	Dr. S. G. Bransford.....	Suisun
Sonoma .....	Dr. S. S. Bogle.....	Santa Rosa
Stanislaus .....	Dr. F. R. De Lappe.....	Modesto
Sutter .....	Dr. J. McFadyen.....	Yuba City
Tehama .....	Dr. A. P. Tarter.....	Tehama
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